

REMARKS

By the *Final Office Action* of 30 March 2011, Claims 1-33 are pending in the Application, with Claims 1-22 are rejected and Claims 23-33 withdrawn from consideration. Applicant thanks the Examiner with appreciation for the careful consideration and prompt examination.

Applicant submits this *Response* solely to facilitate prosecution. As such, Applicant reserves the right to present new or additional claims in this Application that have similar or broader scope as originally-filed. Applicant also reserves the right to present additional claims in a later-filed continuation application that have similar or broader scope as originally-filed. Accordingly, any amendment, argument, or claim cancellation is not to be construed as abandonment or disclaimer of subject matter.

By the present *Response*, Claims 1-22 are pending. Claims 1, 3, 6-11, and 12-22 are previously presented; Claims 2 and 4-5 remain in their original format; and Claims 23-33 remain withdrawn.

No new matter is believed introduced by the present *Response*. It is respectfully submitted that the present Application is in condition for allowance for at least the following reasons:

1. The Office Action Rejections

Claims 1-12, 14, and 17-22 are rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,607,593 to Cote et al. (herein "Cote"). Claim 13 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Cote in view of International Patent Publication No. WO03/013706 to Zha et al. (herein "Zha"). Claims 15-16 are also rejection under § 103(a) as being unpatentable over Cote in view of International Patent Publication No. WO02/04101 to Watanabe et al. (herein "Watanabe").

2. The Pending Claims

Claims 1-22 are pending. Claims 1, 3, 6-11, and 12-22 are previously presented; Claims 2 and 4-5 remain in their original format; and Claims 23-33 remain withdrawn.

3. The Pending Claims are Patentable Over the Cited References

A. The Claimed Invention Overcomes The 35 U.S.C. §102 Rejections

Claims 1-12, 14 and 17-22 are rejected under 35 U.S.C. §102 (b) as being anticipated by Cote. Applicant respectfully submits that the pending claims are patentable over the cited reference, and thus this rejection is traversed and reconsideration is respectfully requested.

Claim 1 recites that gas is supplied through the through-openings in a direction substantially perpendicular to a longitudinal axis of the membranes to provide a substantially even cross flow gas distribution for aerating the membranes within the membrane module. Such an arrangement provides for even cross-flow gas distribution, which enhances scouring of fiber bundles thus reducing the accumulation of solids and inhibiting the blockage of fibers.

This is in contrast to the arrangement shown in Cote. Cote discloses a distribution network 15 having a pair of upstanding pipes which are spaced apart from the filtration modules 31 and a hood arrangement (see Fig. 9). It can be clearly seen that the upstanding pipes in Cote et al. are oriented in a position parallel to the fiber bundles (see Fig. 9). The ozone emitted by the pipes initially travels in a direction parallel to the longitudinal axis of the modules and is then guided towards the fiber bundles by an angled hood. In this arrangement, the gas is not directed in an orientation which is perpendicular to the fiber bundles. Therefore, the arrangement in Cote does not provide cross flow gas distribution relative to the fibers as in the current invention. In addition, Cote cannot provide a substantially even gas distribution because its through-holes in the lower open worked zone 8 are elongated, eliminating the possibility of an even cross flow of gas.

At the very least, for example and not limitation, the distinguishing feature of the claimed invention versus Cote is the different angle of the air scour nozzles. Applying Cote to filtration system causes cleaning problems and thus leads to inefficient processing.

On the other hand, applying the claimed invention overcomes deficiencies in the prior art and produces the desired cleaning effect. Indeed, the Examiner refers to Fig. 9 and 12:4-12 of Cote, indicating that the gas supplied by “pipes positioned essentially perpendicular to the longitudinal axis of the modules.” (*Final Office Action*, p. 7) But one skilled in the art, when reviewing Fig. 9 of Cote, would determine that the pipes are parallel, not perpendicular to the longitudinal axis.

In view of the above, Applicant respectfully submits that independent Claim 1, and those claims that ultimately depend therefrom, i.e., Claims 2-10, are not anticipated by Cote. For the same reasons, Claim 11 is also believed to be patentable over Cote, as independent Claim 11 includes subject matter that is substantially similar to Claim 1. Therefore, it is believed that Claim 11 and those claims that ultimately depend therefrom, including dependent Claims 12, 14 and 17-22 are also not anticipated.

B. The Claimed Invention Overcomes The 35 U.S.C. § 103 Rejections

Claim 13 is rejected under §103(a) as being unpatentable over Cote as previously applied to Claim 11 in view of Zha. Claims 15-16 are rejected under §103(a) as being unpatentable over Cote as previously applied to Claim 11 in view of Watanabe. Applicant respectfully submits that the pending claims are patentable over the cited references, and thus these rejections are traversed and reconsideration is respectfully requested.

Claim 11 recites that gas is supplied through the through-openings in a direction substantially perpendicular to a longitudinal axis of the membranes to provide a substantially even cross flow gas distribution for aerating the membranes within the membrane module. Such an arrangement provides for even cross flow gas distribution that enhances scouring of fiber bundles thus reducing the accumulation of solids and inhibiting the blockage of fibers.

As described in the Application, aspects of the present invention comprise upper 18 and lower 19 through-openings which are arranged around the module circumference (see page 11, lines 8-14 and Fig. 3 of the originally-filed specification). This arrangement provides for even cross flow gas distribution, which enhances scouring of fiber bundles thus reducing the accumulation of solids and inhibiting the blockage of fibers.

By contrast, Cote does not disclose, teach, or suggest through-openings that are arranged around the module circumference. Rather, Cote discloses a distribution network 15 having a pair of upstanding pipes which are oriented in a position parallel to and spaced apart from the filtration modules 31 and a hood arrangement (see Cote, Fig. 9). The ozone emitted by the pipes initially travels in a direction parallel to the longitudinal axis of the modules and is then guided towards the fiber bundles by an angled hood. In this arrangement, the gas is not directed in an orientation which is perpendicular to the fiber bundles. Therefore, the arrangement in Cote does

not provide cross flow gas distribution relative to the fibers as in the current invention.

Therefore, Cote fails to disclose, teach, or suggest the claimed invention. Absent such disclosure, teaching, or suggestion, there would be no reason why one of ordinary skill in the art, who was faced with the same problems confronting the Applicant and who had no prior knowledge of Applicant's claimed structure, would consult Cote alone or in combination with another patent to overcome the problems set forth in the patent application. Claims 13, 15 and 16 ultimately depend from Claim 11. In view of the above, Applicant respectfully submits that Claims 13, 15 and 16 are not obvious.

4. Fees

No claims fees are believed due, as the total number of claims, and independent claims, remains less than the number of claims previously paid.

This *Response* is being submitted within the shortened statutory period of three months and more specifically within two months of the mailing date of the *Final Office Action*. Accordingly, Applicant submits that no extension of time fees are believed due.

Nevertheless, Applicant hereby expressly authorizes the Commissioner to charge Deposit Account No. 19-2179 for any fees deemed due, including any miscalculations of fees due, and to credit any overpayment.

CONCLUSION

By the present *Response*, the Applicant respectfully submits that the Application has been placed in full condition for allowance. Accordingly, the Applicant respectfully requests early and favorable action. Should the Examiner have any further questions or reservations, the Examiner is invited to telephone the undersigned Attorney at 770.751.2224.

Respectfully submitted,

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